Review about Cepas and Quemerais paper : On the intrinsic pinning and shape of charge-density waves in 1D Peierls systems

The paper treats the computation of the ground state of a one-dimension lattice and shows the emergence of charge density wave and the transition from sliding to pinned ground state in presence of a nonlinear (anharmonic) contribution to the elastic Hamiltonian term. The method is exposed in very pedagogic manner. The demonstration starts from integrable cases (Toda and Volterra potentials) in the original model from Brazovskii et al. the solutions of which are recomputed. Then a numerical study shows the Aubry transition towards anti-integrable situations. It is an interesting work where a great amount of knowledge is gathered and makes the paper close from a review but it is also the occasion for the authors to clarify some interesting points. The referee cannot assert that the analytical and the numerical computations are correct in every details but their conclusions confirm the theoretical expectations as for instance the existence of an Aubry transition.

My sole criticism is as follows.
From the abstract and introduction it is difficult to make an opinion about what is new about CDW physics in the present work. The novelty must be enlightened whilst in the present form it is swallowed in a field of recall. The pedagogical presentation is appreciated and must be preserved but the accent must be put on the novelties of the work.

P. 42 below Eq. 44, parenthesis is missing in the text at « Eq. (40) »